

## CLAIMS

1. A device for absorption of impact energy when fixed in use to a vehicle body component, said device comprising one or more deformable members of shape memory material aligned for deformation by an impact on said device.

2. The device recited in claim 1 in which said member or members are aligned between a vehicle bumper and a vehicle body rail.

3. The device recited in claim 1 comprising:  
a crash box having an inlet end;  
a ram having a first end partially inserted into the inlet end of the box and a second end, the ram being aligned when fixed in use to receive an impact on said vehicle body at the second end and to be driven by said impact further into said crash box; and  
one or more of said deformable members, said deformable member(s) having two ends with one end being fixed to said box and the other end fixed to said ram for absorption of impact energy.

4. The device recited in claim 1 in which said deformable member is a shape memory metal alloy.

5. The device recited in claim 1 in which said deformable member is a shape memory metal alloy comprising titanium and nickel.

6. The device as recited in claim 3 in which said deformable member comprises a spring.

7. The device as recited in claim 3 in which said deformable member comprises a sheet.

8. The device as recited in claim 3 in which said deformable member comprises a roll of sheet material.

9. The device as recited in claim 3 in which said deformable member comprised a collapsible tube.

10. The device as recited in claim 3 in which said deformable member comprises a set of concentric tubes.

11. A device for absorption of impact energy when fixed in use to a vehicle body component, said device comprising one or more deformable members of a shape memory metal alloy aligned for deformation by an impact on said device, said members being deformable from an initial shape under an impact of predetermined magnitude and thereafter restorable to their initial shape upon being heated to a predetermined temperature.

12. The device for absorption of impact energy as recited in claim 11 in which said one or more deformable members of a shape memory metal alloy are electrically conductive and restorable to their initial shape upon being heated by electrical resistance heating to a predetermined temperature.

13. The device for absorption of impact energy as recited in claim 11 in which said one or more deformable members comprise titanium and nickel.

14. A device for absorption of impact energy when fixed in use to a vehicle body component, said device comprising:

a crash box having an inlet end;

a ram having a first end partially inserted into the inlet end of the crash box and a second end, the ram being aligned when fixed in use to receive an impact on said vehicle body at the second end and to be driven by said impact further into said crash box;

one or more deformable members of shape memory material, said members being deformable from an initial shape under an impact of predetermined magnitude and thereafter restorable to their initial shape upon being heated to a predetermined temperature, said deformable member(s) having two ends with one end being fixed to said box and the other end fixed to said ram for absorption of impact energy; and

means for heating said one or more deformable members.

15. The device recited in claim 14 in which said deformable member is a shape memory metal alloy.

16. The device recited in claim 14 in which said deformable member is a shape memory metal alloy comprising titanium and nickel.

17. The device recited in claim 1 in which said deformable member is a shape memory polymer or a combination of a shape memory alloy and shape memory polymer.

18. The device recited in claim 14 in which said deformable member is a shape memory polymer or a combination of a shape memory alloy and shape memory polymer.